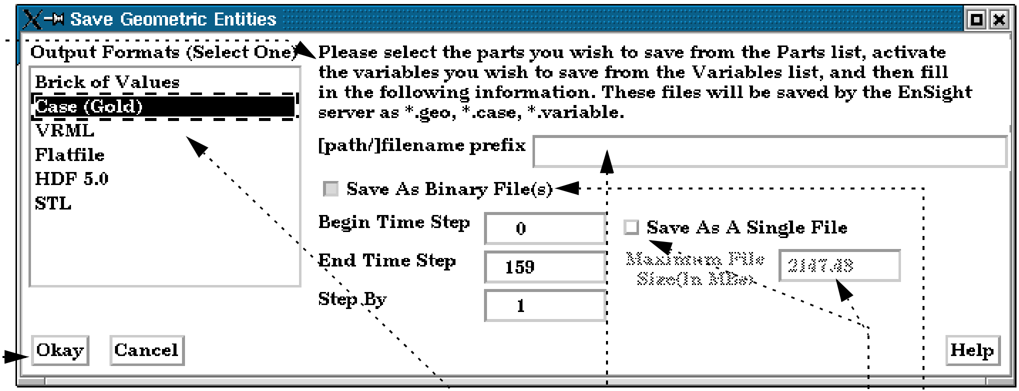
INTRODUCTION

EnSight can has three internal writers that allow saving geometric data and variable values in Brick of Values, Case (EnSight Gold) or VRML. EnSight also allows the user to create their own writer as a dynamic shared library that is loaded at runtime and listed in the addition to the internal writer formats.

BASIC OPERATION

Saving Parts in EnSight Gold or VRML Formats

1. **Select File > Save > Geometric Entities...**



Save Geometric Entities

Please select the parts you wish to save from the Parts list, activate the variables you wish to save from the Variables list, and then fill in the following information. These files will be saved by the EnSight server as *.geo, *.case, *.variable.

Output Formats (Select One): Case (Gold)

☐ Save As Binary File(s)

Begin Time Step: 0

End Time Step: 159

Step By: 1

☐ Save As A Single File

Maximum File Size(In MBs): 2147.48

2. **Be sure the desired output format is selected.**
3. **Follow the instructions given.**
4. **Enter a file root name.**
5. **If the dataset is transient, specify the beginning, ending, and step values.**

For EnSight Gold only:

6. ***Toggle to save as binary files or not.***
7. ***If the dataset is transient you can choose to save the multiple timesteps in one file (one file per variable). If you choose this option, you can also specify the maximum file size.***
8. **Click Okay.**

Both internal and user-defined writers have access only to the geometry of selected parts and each of their active variables. Only parts located on the server can be saved. This includes all original model parts, and the following created parts: 2D-clips, Elevated Surfaces, Developed Surfaces, and Isosurfaces. The VRML internal writer saves all the visible parts on the server (thus, particle traces, vector arrows, contours, etc. will not be saved) in their current visible state except for Parts which have limit fringes set to transparent. The VRML file will be saved on the client.

Output in the EnSight formats is intended to provide a method to save both model and created parts (with active variables) for subsequent reuse with EnSight. VRML output is intended for export to other systems.

Most World Wide Web browsers come with either built-in or plug-in support for VRML file viewing. Since VRML is a subset of the Inventor format, you can also import it into programs accepting Inventor files. You may, however, have to modify the first line of the file (with any text editor) to read:

```
#Inventor V2.0 ascii
```

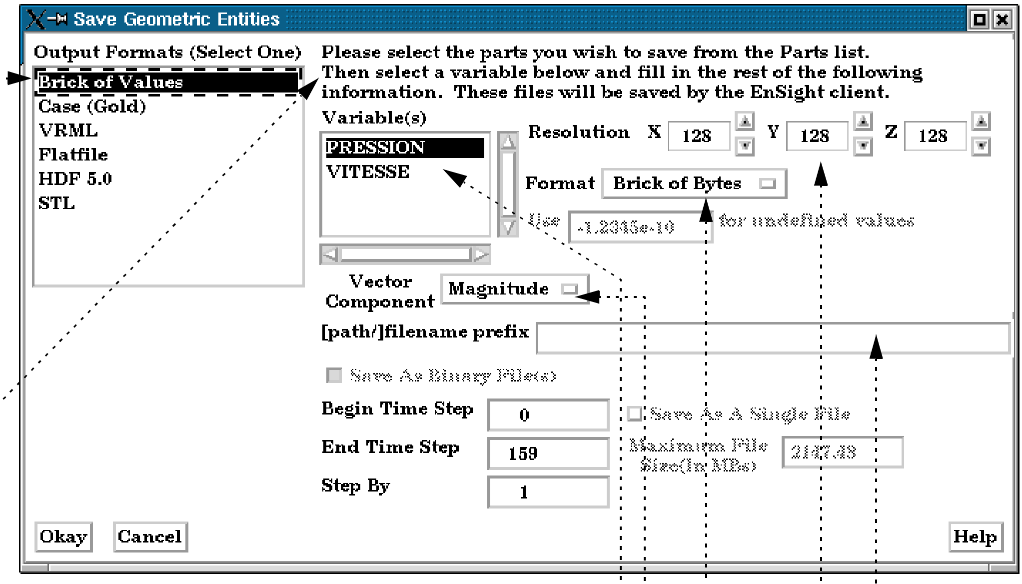
This may work when importing VRML into Showcase from Silicon Graphics (a presentation layout tool). Once imported, the 3D model can still be manipulated – even during a presentation.

There are some important differences in how EnSight saves parts according to format chosen.

	Case(EnSight Gold)	**VRML**
Which parts are saved?	All parts currently selected in the Main Parts List (except those indicated below)	All visible parts
Saved from where?	EnSight server	EnSight client
Which parts *cannot* be saved?	Any client-based part: contours, vector arrows, particle traces, profiles.	

Saving Parts in Brick of Values Format

1. **Select File > Save > Geometric Entities...**



Output Formats (Select One)
Brick of Values
Case (Gold)
VRML
Flatfile
HDF 5.0
STL

Please select the parts you wish to save from the Parts list. Then select a variable below and fill in the rest of the following information. These files will be saved by the EnSight client.

Variable(s): PRESSION, VITESSE

Resolution X 128 Y 128 Z 128

Format: Brick of Bytes

Use -1.2345e-10 for undefined values

Vector Component: Magnitude

[path/]filename prefix:

☐ Save As Binary File(s)

Begin Time Step: 0

End Time Step: 159

Step By: 1

☐ Save As A Single File

Maximum File Size(In MBs): 2147.48

2. **Be sure Brick of Values is selected as the Format type.**
3. **Follow the instructions given.**
4. **Select the desired variable.**
5. **If the variable is a vector, select the component desired.**
6. **Select the sampling resolution.**
7. **Select the sampling format, Brick of Bytes or Brick of Floats.**
8. **Enter a file root name.**
9. **Click Okay.**

Brick of Bytes and Brick of Floats is intended to give you an interface mechanism to volume rendering codes.

When you click the Okay button the selected parts are discritized to the resolution indicated using the box tool as the bounds and orientation (x/y/z resolution refers to the x/y/z directions for the box tool).

For Brick of Bytes (BoB) format a value of 0 is reserved for undefined (i.e., the discritized point found no variable information). The value of 1 is tied to all variable values less than or equal to the minimum palette value tied to the variable chosen while 255 is tied to all values greater to or equal to the maximum palette value.

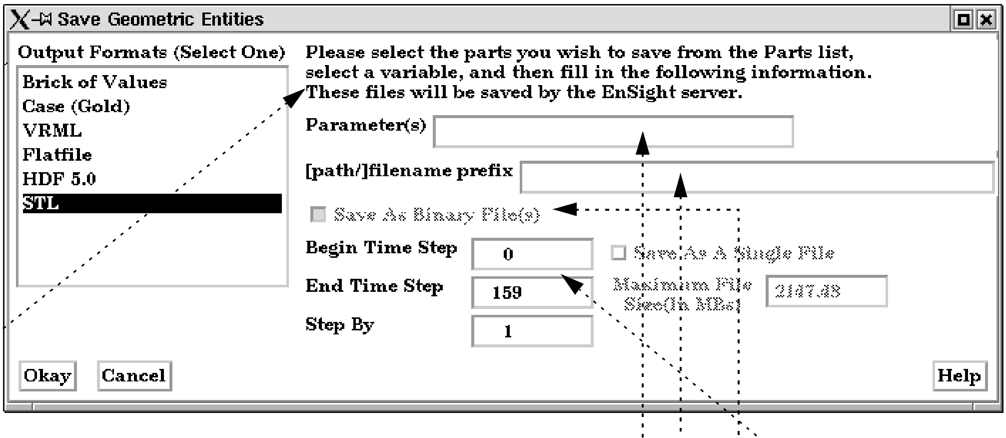
For Brick of Floats (BoF) format undefined values are assigned the undefined value indicated in dialog.

Both BoB and BoF files are written out without any metadata - only the values for the discritized points is written. The order of the data is according to the following pseudo code:

```
num_values = 0
for(z=0; z<z_resolution; ++z) {
  for(y=0; y<y_resolution; ++y) {
    for(x=0; x<x_resolution; ++x) {
      value_array[num_values] = value_at_this_location
    }
  }
}
write(file_name,value_array)
```

Saving Parts in User Defined Writer Formats (Flatfile, HDF 5.0, STL)

1. **Select File > Save > Geometric Entities...**



Output Formats (Select One)

- Brick of Values
- Case (Gold)
- VRML
- Flatfile
- HDF 5.0
- **STL**

Please select the parts you wish to save from the Parts list, select a variable, and then fill in the following information. These files will be saved by the EnSight server.

Parameter(s)

[path/]filename prefix

☐ Save As Binary File(s)

Begin Time Step: 0

End Time Step: 159

Step By: 1

☐ Save As A Single File

Maximum File Size(In MBs): 2147.48

2. **Select the desired user defined writer format.**
3. **Follow the instructions given.**
4. **If the writer accepts parameters, enter any desired ones in the Parameter(s) field.**
5. **Enter a file root name.**
6. **Save as binary or Ascii file, based on this toggle.**
7. **If the dataset is transient, specify the Time Step info.**
   (Note that some writers produce static data, and thus may only use the Begin Time Step info)
8. **Click Okay.**

The userd-defined writers can call the routines of an EnSight API to retrieve, for example, nodal coordinates, node ids, element ids of parts selected in the Parts window, to be passed by value to be used, manipulated and/or written out in any format desired. The User-defined writer dialog includes a Parameter field that allows the passing of text into the writer from the GUI. This text could contain extra options which the writer understands.

Several example writers (including source code header files, Makefile and the corresponding shared library) are included to demonstrate this capability.

The Case (Gold) Lite reader is included to demonstrate how to exercise most of the API and output a subset of the Case (Gold) format. Complex numbers and custom Gold format are not supported with this writer. The Case (Gold) writer ignores the Parameter field. While the writer is not compiled, the source code of this writer, the required header files, and the Makefile are included.

The Flatfile user-defined writer is designed to demonstrate the output of selected part nodal data (coordinates & IDs) as well as active variable values (scalar and/or vector only) in a comma delimited format easily imported into other applications. If any of the keywords ‘ANSYS’ or ‘force’ or ‘body’ is entered into the Parameter field, then Flatfile will output an ANSYS body force file.

The HDF 5.0 writer is designed to write out selected parts and their corresponding active variables using the HDF 5.0 API which is compatible with the EnSight HDF user-defined reader. The HDF writer ignores the Parameter field.

The STL user-defined writer is designed to write out the border geometry in the form of triangular 2D elements of the selected part(s) at the beginning timestep. The end time and the step time are ignored. The STL format does not support multiple parts in a single binary file, but does support multiple parts in a single ASCII file. Therefore, if multiple parts are selected and ascii is checked, the STL writer outputs an ascii file with the border of each of the parts. If multiple parts are selected and binary is checked, the STL writer outputs a binary file containing a single border of the multiple parts. The STL writer only saves the beginning timestep and ignores the End Timestep and Step By fields. The STL writer ignores the Parameter field.

There are some important differences in how EnSight saves parts according to format chosen.

	User Defined Writers (UDW)
Which parts are available to the UDW?	All parts currently selected in the Main Parts List (except those indicated below)
Where are the available parts located?	EnSight server
Which parts are unavailable to the UDW?	Any client-based part: contours, vector arrows, particle traces, profiles

More user-defined writers may be distributed with EnSight in the future.

SEE ALSO

User Manual: **Saving Geometric Entities**

Readme files is $CEI_HOME/ensight76/src/writers/README